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COHEN, PONTANI, LIEBERMAN & PAVANE
551 FIFTH AVENUE
SUITE 1210
NEW YORK, NY 10176

EXAMINER

PATEL, GAUTAM

ART UNIT	PAPER NUMBER
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2627

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/666,518

Applicant(s)

MIMORI ET AL.

Examiner

Gautam R. Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/7/04;10/27/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. Claims 1-45 are pending for the examination.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), which papers have been placed of record in the file.

NOTES & REMARKS

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. For example line 14 of claim 1 has spelling of “arranged” wrong. Claim 36 has same problem. Claims 22-26 have spelling mistakes.

Applicant's cooperation is requested in correcting any errors of which Applicant may become aware in the specification.

Drawings/Objection

4. The drawings are objected for following reasons:

The drawings are objected to under 37 C.F.R. § 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “diffracting function for setting L-th order and M-th order diffracted light of the light beam” and “an optical path difference giving structure” must be shown or the feature cancelled from the claim.

No new matter should be entered.

Applicant is required to submit a proposed drawing correction in response to this Office Action. Any proposal by the applicant for amendment of the drawings to cure defects must consist of following:

Drawing changes must be made by presenting replacement figures which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments, or remarks, section of the amendment, and may be *accompanied by a marked-up copy of one or more of the figures being amended, with annotations*. Any replacement drawing sheet *must be identified in the top margin as “Replacement Sheet”* and include all of the figures appearing on the immediate prior version of the sheet, even though only one figure may be amended. *Any marked-up (annotated) copy showing changes must be labeled “Annotated Marked-up Drawings” and accompany the replacement sheet in the amendment (e.g., as an appendix).*

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a proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Correction may not be held in abeyance.

Specification

5. The disclosure is objected for following reasons.

The title of the invention is neither precise nor descriptive. A new title is required which should include, using twenty words or fewer, claimed features that differentiate the invention from the Prior Art. It is recommended that the title should reflect the gist of or the improvement of the present invention.

Correction is required.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending application Serial No. 10/654,918. Although the conflicting claims are not identical, they are not patentably distinct from each other because are claiming the concept of maximum diffraction efficiency with the help of ring-shaped diffractive element having dual wavelength diffraction capability.

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The concept of claim 2-45 has been disclosed in the above pending application and therefore claims 2-45 are also rejected.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

CLAIMS OBJECTION

7. Claims 18 is/are objected as being indefinite and not further limiting the subject matter at hand. It is not clear what so called magnification "m" relates to and how does it further limit claim 17.

Claim Rejections - 35 U.S.C. § 112

8. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-45 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

A. L-th order and M-th order diffracted light required by the claims is not described in the specification. On paragraph 47, 55-63 and 316 the specification mentions M-th order and L-th order diffracted light but does not explain what these M-the and L-the order lights are and how they relate to the wavelengths λ_1 and λ_2 , and also with each other. Accordingly, the specification does not explain to one of ordinary skill in the art at the time of the invention, how to make and or use the invention comprising the claimed "M-th and L-th order diffracted light".

Claim 36 has the same problem.

B. Last two lines of claim 1, "An assumption of no existence of the optical path difference giving structure", is not defined at all. It not clear what is meant by "assumption" and what are limits of this assumption. Thus claims 1-35 does not tell one of ordinary skill in the art how to make and or use the invention comprising an assumption.

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9. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1-45 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claim 1, lines 20-25 are confusing and unclear. It is not clear what are meets and bound of the claim language, which claims M-th, and L-th order diffracted light. It is not clear what number M or L represents except that it not zero. But it is not clear if this number is whole number or a fraction, and more importantly how it is related to wavelengths.

Claim 36 has the same problem.

B. Last two lines of claim 1, "An assumption of no existence of the optical path difference giving structure", is not defined at all. The word "assumption" makes claims 1-35 indefinite. Hoe can one compare anything with an assumption.

Claim Rejections - 35 U.S.C. § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-18, 20-34, 36-39, & 41-44, as best understood, are rejected under 35 U.S.C. § 102(e) as being anticipated by Shimano et al., US. patent 6,717,906 (hereafter Shimano).

As to claim 1, Shimano discloses the invention as claimed, an optical element [see Figs. 1-37, especially figs. 6, 8 and 34] including a diffractive structure and ring-shaped zones, comprising:

a diffractive structure [fig. 34] having a plurality of diffracting ring-shaped zones arranged around an optical axis on at least one optical surface; and an optical path difference giving structure arranged on an optical surface of at least one of the plurality of diffracting ring-

shaped zones, for giving a prescribed optical path difference to a prescribed light beam passing through the diffracting ring-shaped zone, wherein the optical surface of the diffractive structure is a structure having a diffracting function for setting L-th ($L \neq 0$) order diffracted light of the light beam having the first wavelength λ_1 to a maximum diffraction efficiency and for setting M-th ($M \neq 0$) order diffracted light of the light beam having the second wavelength λ_2 to a maximum diffraction efficiency in case of an assumption of no existence of the optical path difference giving structure [col. 17, line 11 to col. 18, line 15; fig. 8 & 34].

11. The aforementioned claim 2, recites the following elements, inter alia, disclosed in Shimano:

as compared with [the assumption of] no existence of the optical path difference giving structure, the optical path difference giving structure lowers an absolute value of an optical phase difference between the L-th order diffracted light of the light beam having the first wavelength λ_1 and the M-th order diffracted light of the light beam having the second wavelength λ_2 by changing a phase of at least one of the L-th order diffracted light of the light beam having the first wavelength λ_1 and the M-th order diffracted light of the light beam having the second wavelength λ_2 , the L-th order diffracted light and the M-th order diffracted light being caused by the structure having the diffracting function [col. 8, line 66 to col. 9, line 51].

12. The aforementioned claim 3, recites the following elements, inter alia, disclosed in Shimano:

as compared with the assumption of no existence of the optical path difference giving structure, the optical path difference giving structure lowers an absolute value of an optical phase difference between the L-th order diffracted light of the light beam having the first wavelength λ_1 and the M-th order diffracted light of the light beam having the second wavelength λ_2 by substantially giving no change of a phase of one of the L-th order diffracted light of the light beam having the first wavelength λ_1 and the M-th order diffracted light of the light beam having the second wavelength λ_2 and by giving a phase difference to the other of the L-th order diffracted light of the light beam having the first wavelength λ_1 and the

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M-th order diffracted light having the light beam having the second wavelength λ_2 , the L-th order diffracted light and the M-th order diffracted light being caused by the structure having the diffracting function [col. 8, line 66 to col. 9, line 51; col. 17, line 11 to col. 18, line 15; fig. 8 & 34].

13. The aforementioned claim 4, recites the following elements, inter alia, disclosed in Shimano:

as compared with [the assumption of] no optical path difference giving structure, the optical path difference giving structure lowers an absolute value of an optical phase difference between the L-th order diffracted light of the light beam having the first wavelength λ_1 and the M-th order diffracted light of the light beam having the second wavelength λ_2 by giving a phase difference to both the L-th order diffracted light of the light beam having the first wavelength λ_1 and the M-th order diffracted light of the light beam having the second wavelength λ_2 , the L-th order diffracted light and the M-th order diffracted light being caused by the structure having the diffracting function [col. 8, line 66 to col. 9, line 51; col. 17, line 11 to col. 18, line 15; fig. 8 & 34].

14. The aforementioned claim 5, recites the following elements, inter alia, disclosed in Shimano:

as compared with the assumption of no optical path difference giving structure, the optical path difference giving structure lowers an absolute value of an optical phase difference between the L-th order diffracted light of the light beam having the first wavelength λ_1 and the M-th order diffracted light of the light beam having the second wavelength λ_2 by giving an optical path difference approximately equal to an integral multiple having the first wavelength λ_1 to the L-th order diffracted light of the light beam having the first wavelength λ_1 to substantially give no change of a phase difference generated by the diffractive structure and by giving an optical path difference not equal to an integral multiple having the second wavelength λ_2 to the M-th order diffracted light of the light beam having the second wavelength λ_2 . [col. 8, line 66 to col. 9, line 51; col. 17, line 11 to col. 18, line 15; fig. 8 & 34].

15. The aforementioned claim 6, recites the following elements, inter alia, disclosed in Shimano:

the optical path difference giving structure sets the absolute value of the optical phase difference to a value lower than 0.6π radians [fig. 6] [col. 8, line 66 to col. 9, line 51; col. 17, line 11 to col. 18, line 15].

16. The aforementioned claim 7, recites the following elements, inter alia, disclosed in Shimano:

the structure having the diffracting function has a discontinuous surface formed in a serrate shape, and the optical path difference giving structure has a discontinuous surface formed in a stepped shape along a direction of the optical axis [see fig. 34; & col. 17, line 11 to col. 18, line 15].

17. The aforementioned claim 8, recites the following elements, inter alia, disclosed in Shimano:

the structure having the diffracting function has a discontinuous surface formed in a stepped shape along a direction of the optical axis, and the optical path difference giving structure has a discontinuous surface formed in a stepped shape along the direction of the optical axis [see fig. 34; & col. 17, line 11 to col. 18, line 15].

18. The aforementioned claim 9, recites the following elements, inter alia, disclosed in Shimano:

the optical surface comprises a central region arranged around the optical axis and formed in an approximately circular shape, and a peripheral region arranged at a periphery of the central region, the structure having the diffracting function and the optical path difference giving structure are provided in the central region, and the diffractive structure formed in a serrate shape is provided in the peripheral region [see fig. 34; & col. 17, line 11 to col. 18, line 15; surface 1A & 1B].

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19. The aforementioned claim 10, recites the following elements, inter alia, disclosed in Shimano:

the optical surface comprises a central region arranged around the optical axis and formed in an approximately circular shape, and a peripheral region arranged at a periphery of the central region, the structure having the diffracting function and the optical path difference giving structure are provided in the central region, and the optical path difference giving structure is provided in the peripheral region [see fig. 34; & col. 17, line 11 to col. 18, line 15; surface 1A & 1B].

20. The aforementioned claim 11, recites the following elements, inter alia, disclosed in Shimano:

the optical surface comprises a central region arranged around the optical axis and formed in an approximately circular shape, and a peripheral region arranged at a periphery of the central region, the structure having the diffracting function and the optical path difference giving structure are provided in the central region, and a refractive structure for refracting a light beam is arranged in the peripheral region [see fig. 34; & col. 17, line 11 to col. 18, line 15; surfaces 1A & 1B].

21. The aforementioned claim 12, recites the following elements, inter alia, disclosed in Shimano:

$L=M$ is satisfied [see fig. 34; & col. 17, line 11 to col. 18, line 15; surfaces 1A & 1B].

NOTE: Equal steps satisfies $L=M$.

22. The aforementioned claim 13, recites the following elements, inter alia, disclosed in Shimano:

$L=M=1$ is satisfied [see fig. 34; & col. 17, line 11 to col. 18, line 15; surfaces 1A & 1B].

23. The aforementioned claim 14, recites the following elements, inter alia, disclosed in Shimano:

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the number of the discontinuous surfaces, which are formed in a stepped shape along a direction of the optical axis and composes the optical path difference giving structure, is 2 or 3 [see fig. 34; & col. 17, line 11 to col. 18, line 15; surfaces 1A & 1B].

24. The aforementioned claim 15, recites the following elements, inter alia, disclosed in Shimano:

the first wavelength λ_1 satisfies $370 \text{ nm} \leq \lambda_1 \leq 430 \text{ nm}$, and the second wavelength λ_2 satisfies $620 \text{ nm} \leq \lambda_2 \leq 680 \text{ nm}$ [figs. 32-33; col. 16, line 53 to col. 17, line 10].

25. The aforementioned claim 16, recites the following elements, inter alia, disclosed in Shimano:

the structure having the diffracting function sets a sum of a diffraction efficiency of the L-th order diffracted light of the light beam having the first wavelength λ_1 and a diffraction efficiency of the M-th order diffracted light of the light beam having the second wavelength λ_2 to 170% or less, and the optical path difference giving structure heightens the sum of the diffraction efficiency of the L-th order diffracted light of the light beam having the first wavelength λ_1 and the diffraction efficiency of the M-th order diffracted light of the light beam having the second wavelength λ_2 by 10% or more. [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

26. The aforementioned claims 17, 33 & 43, recites the following elements, inter alia, disclosed in Shimano:

the light beam having the first wavelength λ_1 and the light beam having the second wavelength λ_2 are respectively incident on the optical surface as a diverging light beam, and the light beam having the first wavelength λ_1 and the light beam having the second wavelength λ_2 are converged on a prescribed optical information recording medium in a condition that spherical aberration and/or wave front aberration are corrected [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

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27. The aforementioned claims 18, 34 & 44, recites the following elements, inter alia, disclosed in Shimano:

a magnification m satisfies a formula: $-0.295 \leq m \leq -0.049$ [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

28. The aforementioned claims 20 & 41, recites the following elements, inter alia, disclosed in Shimano:

the first wavelength λ_1 and the second wavelength λ_2 are a use reference wavelength corrected [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

29. The aforementioned claim 21, recites the following elements, inter alia, disclosed in Shimano:

the optical path difference giving structure gives an optical path difference to the diffracted light so that a $-N$ -th order diffracted light of the light beam having the use reference wavelength λ_1 has a maximum diffraction efficiency and so that a $(-N+1)$ -th order diffracted light of the light beam having the use reference wavelength λ_2 or a $(-N-1)$ -th order diffracted light of the light beam having the use reference wavelength λ_2 has a maximum diffraction efficiency [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

30. The aforementioned claim 22, recites the following elements, inter alia, disclosed in Shimano:

the optical surface of the diffracting ring-shaped zone has a structure substantially inclined with respect to the optical surface formed in a prescribed aspherical shape, the structure substantially inclined having a discontinuous surface formed in a serrate shape, and the optical path difference giving structure has a discontinuous surface formed in a stepped shape along the direction of the optical axis [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

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31. The aforementioned claim 23, recites the following elements, inter alia, disclosed in Shimano:

the optical surface of the diffracting ring-shaped zone has a structure substantially inclined with respect to the optical surface formed in a prescribed aspherical shape, the structure substantially inclined having a discontinuous surface formed in a stepped shape along the direction of the optical axis, and the optical path difference giving structure has a discontinuous surface formed in a stepped shape along the direction of the optical axis [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

32. The aforementioned claim 24, recites the following elements, inter alia, disclosed in Shimano:

the optical surface formed in the prescribed aspherical shape is partitioned into a central region arranged around the optical axis and formed in an approximately circular shape, and a peripheral region surrounding a periphery of the central region, the diffracting ring-shaped zones are arranged in the central region, and a diffracting ring-shaped zone formed in the serrate shape is arranged in the peripheral region [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

33. The aforementioned claim 25, recites the following elements, inter alia, disclosed in Shimano:

the optical surface formed in the prescribed aspherical shape is partitioned into a central region arranged around the optical axis and formed in an approximately circular shape, and a peripheral region surrounding a periphery of the central region, the diffracting ring-shaped zones are arranged in the central region, and the optical path difference giving structure is arranged in the peripheral region [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

34. The aforementioned claim 26, recites the following elements, inter alia, disclosed in Shimano:

the optical surface formed in the prescribed aspherical shape is partitioned into a central region arranged around the optical axis and formed in an approximately circular shape, and a

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peripheral region surrounding a periphery of the central region, the diffracting ring-shaped zones are arranged in the central region, and a refractive structure for reflecting the light beam is arranged in the peripheral region [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

35. The aforementioned claim 27, recites the following elements, inter alia, disclosed in Shimano:

the number of diffracting ring-shaped zones is from 3 to 20 [see fig. 34].

NOTE: Zones R1-R3

36. The aforementioned claim 28, recites the following elements, inter alia, disclosed in Shimano:

the optical path difference giving structure gives an optical path difference equal to an integral multiple of the use reference wavelength λ to the light beam having the use reference wavelength λ . [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

37. The aforementioned claim 29, recites the following elements, inter alia, disclosed in Shimano:

wherein $L=M$ is satisfied [see fig. 34; & col. 17, line 11 to col. 18, line 15; surfaces 1A & 1B].

NOTE: Equal steps satisfies $L=M$.

38. The aforementioned claim 30, recites the following elements, inter alia, disclosed in Shimano:

$L=N$ is satisfied.

39. The aforementioned claim 31, recites the following elements, inter alia, disclosed in Shimano:

wherein $M=N$ is satisfied. [see fig. 34; & col. 17, line 11 to col. 18, line 15; surfaces 1A & 1B].

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40. The aforementioned claim 32, recites the following elements, inter alia, disclosed in Shimano:

$L=M=N$ is satisfied. [see fig. 34; & col. 17, line 11 to col. 18, line 15; surfaces 1A & 1B].

41. As to claim 36, it is rejected for the similar reasons set forth in the rejection of claim 1, supra. As to the added limitation of plurality of optical elements [see fig. 35].

42. As to claim 37, it is rejected for the similar reasons set forth in the rejection of claim 2, supra.

43. The aforementioned claim 38, recites the following elements, inter alia, disclosed in Shimano:

one of the optical elements is an objective optical element [objective lens] , and the light beam having the first wavelength λ_1 and the light beam having the second wavelength λ_2 are respectively incident on the objective optical element as a diverging light beam, and the light beam having the first wavelength λ_1 and the light beam having the second wavelength λ_2 are converged on a prescribed optical information recording medium in a condition that spherical aberration and/or wave front aberration are corrected [col. 8, line 66 to col. 9, line 51; col. 16, line 53 to col. 18, line 15; figs. 32-34].

Claim Rejections - 35 U.S.C. § 103

44. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19, 35, 40 and 45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shimano as applied to claims 1-18, 20-34, 36-39, 41-44.

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Regarding claims 19 & 35, although Shimano does not specifically disclose that the a curvature radii $R1$ & $R2$ satisfies $-3.2 < R2/R1 < -1.9$ to the extent claimed.

Shimano teaches different radii for different regions and sides. The limitations in claim 10 do not define a patentable distinct invention over that in Shimano since both the invention as a whole and Shimano are directed to removing aberrations in CD and DVD and use single structure to read CD and DVD with a single system in the optical pickup. The degree in which the ration $R2/R1$ is defined presents no new or unexpected results, so long as the optical pickup can read CD and DVD with minimum aberration. Therefore, to have the ratio satisfy $3.2 < R2/R1 < -1.9$ with respect to diffraction element in an optical pickup would have been routine experimentation and optimization in the absence of criticality.

45. As to claims 40 & 45, Shimano teaches multiple light sources. Shimano does not specifically teach a third light source for third thickness. "Official Notice" is taken that both the concept and the advantages of providing a third light source are well known and expected in the art. It would have been obvious to include third light source to Shimano as this extra light source is are known to provide higher usefulness in the same system and thereby saving time and money while trying to read disc of third thickness type. These concepts are well known in the art and do not constitute a patentably distinct limitation, per se [M.P.E.P. 2144.03].

ALTERNATE REJECTION

46. Claims 1-45 are rejected, as best understood, are rejected under 35 U.S.C. § 102(e) as being anticipated by Maruyama et al., US. patent 6,594,222 (hereafter Shimano).

Maruyama discloses the concept of diffracting element being used for reading CD and DVD with minimum aberration and maximizing diffraction efficiency [see fig. 3 and Summary of invention]. As to dependent claims these concepts are disclosed in the detail description of the disclosure including sixth order light [col. 5, line 34 to col. 16, line 5]

Other prior art cited

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47. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a) Takeuchi et al. (US. Patent 6,873,590).
- b) Ota et al. (US. patent 6,687,209).
- c) Maruyama (US. patent 5978140)
- d) Soskind (US. patent 6462874)
- e) Feldman (US. patent 5202775)

Contact information

48. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is 571-272-7625. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2650) where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Dwayne Bost, who can be reached on (571) 272-7023.

Any inquiry of a general nature or relating to the status of this application should be directed to the Electronic Business Center whose telephone number is 866-217-9197 or the USPTO contact Center telephone number is (800) PTO-9199.



**GAUTAM R. PATEL
PRIMARY EXAMINER**

Gautam R. Patel
Primary Examiner
Group Art Unit 2627

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